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From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
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To: Info-Hams

Info-Hams Digest Fri, 17 Dec 93 Volume 93 : Issue 1472

Today's Topics:

 SWR tweeking: Details, details... (2 msgs)

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Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 16 Dec 93 23:53:58 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu
Subject: SWR tweeking: Details, details...
To: info-hams@ucsd.edu

George S. Reiswig (gereiswi@nmsu.edu) wrote:

: A question for all you techno-whizzes out there: When measuring
: the SWR with (guess what) an SWR meter, is it really crucial to place the
: meter between the feed line and the antenna, or can you put it between the
: transmitter and the feed line? Would the latter yield spurious readings?

An SWR meter will give you an accurate indication of SWR on a line
of the impedance for which the meter is calibrated (designed), wherever
you put it in that line, assuming that the meter itself is accurate.
The SWR on the line will be different at different points along the line
because of loss in the line, and possibly because of internal reflections
in the line (e.g., if the line is damaged). It is important to note
that the meter you use knows nothing about the line its connected to
except the current and voltage at the point where it's connected--that
is, if you hook it to a line that's a different impedance than the
meter is calibrated for, you will get wrong readings.

If the meter is appropriate for the line you are using and you want to match the antenna to the line, you will get the most accurate readings by putting the meter at the antenna end. That's because you measure all the reflected power, not attenuated by a length of line, and you measure only the forward power that actually reaches the antenna, not the full xmtr output unattenuated by the line. But if it's more convenient, you can start your measurements at the transmitter end. If you get that end to 1:1, then the other end will be 1:1 also. Double-check if you wish when you are satisfied with that by putting the meter at the antenna. But of course if it's up 150 feet in the air, this isn't very practical...

If you know the line loss, you can predict the SWR at the opposite end knowing the SWR at one end. If your transmitter doesn't complain too much, you can measure the line loss by opening (or shorting) one end and measuring the SWR at the other end, and use the same formula rearranged, since you know the SWR at the open (or shorted) end is infinity:1. It doesn't take a whole lot of line loss to make the SWR quite a bit "better".

Date: 16 Dec 93 23:31:50 GMT
From: ogicse!emory!kd4nc!ke4zv!gary@network.ucsd.edu
Subject: SWR tweeking: Details, details...
To: info-hams@ucsd.edu

In article <2eq8cuINNpg1@dns1.NMSU.Edu> gereiswi@nmsu.edu (George S. Reiswig) writes:

>

> A question for all you techno-whizzes out there: When measuring
> the SWR with (guess what) an SWR meter, is it really crucial to place the
> meter between the feed line and the antenna, or can you put it between the
> transmitter and the feed line? Would the latter yield spurious readings?
> Thanks for the help, and Merry Christmas!

Well that depends on why you're doing the SWR measurement, and how well you know the characteristics of your line. If you know your particular line characteristics, you can make the measurement **anywhere** that's convenient and use the Smith Chart, or the formulas in the Antenna Book to determine what complex impedance appears at any point in the system.

If you don't know the characteristics of the line, then you can't determine the "real" SWR on the line anyway, but by measuring at the antenna, with suitable precautions to avoid near field effects, you can determine the mismatch magnitude at the antenna, but not it's precise complex nature or absolute sign without further measurements. For most uses of the "will my

transmitter like this?" nature, measuring at the transmitter end will be all that's necessary.

Gary

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Gary Coffman KE4ZV	I kill you,	gatech!wa4mei!ke4zv!gary
Destructive Testing Systems	You kill me,	uunet!rsiatl!ke4zv!gary
534 Shannon Way	We're the Manson Family	emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244	-sorry Barney	

End of Info-Hams Digest V93 #1472

